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Lockheed Martin

Storage that Tackles the High Seas

"The Snap Server 550 was the only NAS alternative we tested that met all of our performance requirements."

Joseph Ozzimo
Computing and Network Infrastructure (CNI) Asset Lead
U.S. Coast Guard NSC Project
Lockheed Martin Maritime Systems and Sensors

Snap Server 550 passes demanding Coast Guard requirements for storage at sea with flying colors.

The National Security Cutter (NSC) is the crown jewel of U.S. Coast Guard's Integrated Deepwater Assets program, an $11 billion initiative to substantially upgrade and modernize the Coast Guard's integrated sea, land and air capabilities. Measuring 418 feet and weighing in at 4,300 tons, the NSC, to be christened the USCG Bertholf, will be the largest, most advanced cutter in the Coast Guard fleet when completed in the summer of 2007. Key to the NSC's impressive capabilities is its use of advanced technologies and systems. The NSC is being built by Integrated Coast Guard Systems, LLP, a joint venture of Northrop Grumman and Lockheed Martin corporations.

The Challenge

Vibrating Platform

Few environments are more challenging to computer systems than life aboard ship. The Lockheed Martin team tasked with designing the NSC's on-board and shore-based IT systems had to meet a range of real-world operational requirements — including the need to withstand continual vibration, especially those generated by the ship's massive propeller shafts.

Joseph Ozzimo, Computing and Network Infrastructure (CNI) National Security Cutter Asset Lead for Lockheed Martin Maritime Systems and Sensors, led the team tasked with finding a network attached storage (NAS) system that could take the shake and provide reliable backup for the 50-server network on board the NSC.

"Going into the project, Dell and Sun were the Coast Guard's primary technology partners, so we selected a Dell 745 PowerVault server for our NAS," Ozzimo says. "But when we performed vibration testing on the Dell server, it failed."

Ozzimo notes that on-board systems are mounted in specially designed enclosures designed to help isolate them from vibration. The team tried some different mounting techniques to mitigate the problem, but still could not get the Dell unit to pass successfully.

Executive Summary

Challenge

Extremely demanding marine environment

Heterogeneous Windows/Sun Solaris network environment

Solution

Snap Server 550

Results

Only network attached storage (NAS) to pass rigorous vibration test

Multi-protocol support enabled easy integration of both Windows and Sun servers

With a tight schedule and time running out, Ozzimo's team had no choice but to try alternatives in hopes of finding a storage server that could stand up to punishment. Unfortunately, two storage devices from other vendors met the same fate as the Dell.

Solution

Snap Server 500 Series

Finally, Ozzimo issued a "may day" to Adaptec, which recommended the new Snap Server 550 configured with high-performance Serial Attached SCSI (SAS) drives. The new Snap Server 500 Series from Snap Server by Adaptec is the first mid-range NAS solutions built on AMD's 64-bit Option architecture, supporting both Serial Attached SCSI (SAS) and Serial ATA (SATA) disk drives.

"Adaptec shipped us a Snap Server 550 and we put it through the same rigorous vibration test the others had failed," Ozzimo says. "The Snap Server 550 passed with flying colors."

The Snap Server 550 also offered a level of performance and capacity that were unmatched. In NetBench testing, the Snap Server 500 series performed more than three times faster than the HP DL100 G2 and Dell PowerVault 745N. It scales from 1.2TB up to 43.2TB on the fly, in a single 1U appliance.

Based on its ability to withstand the environmental test, together with its market-leading performance, the Snap Server 550 was selected for use aboard the NSC. Two 550s were ordered to handle backup chores — one for the classified data network and the other for the non-classified network. In addition, Snap Server 520s were selected for shore detail.

Results

Performance Made Simple

An important advantage of the Snap Server 550s became clear as soon as the Lockheed team installed the units in the NSC network. According to Rob Logan, Associate Member Engineer on the NSC project, the NSC's heterogeneous environment called for storage to be shared across Windows and Sun Solaris servers, communicating via NFS and Samba.

"The Snap Server's multi-protocol support allowed us to do this with no additional configuration on our part," Logan says. "With other storage devices we looked at, we had to perform all kinds of work-arounds and recreate accounts over and over. With the Snap Server, we were good to go right from the beginning." As a result, deployment was quick and easy.

The Snap Server 550s also provided the data protection required, with built-in RAID 5 and integrated backup support.

The Lockheed team was also impressed with the Snap Server 550's speed and performance, shown in NetBench tests to be more than three times faster than competitive NAS devices.

"The Snap Server 550 runs very quickly, servicing all requests virtually instantaneously. There are definitely no bottlenecks," Logan says.

But perhaps the most important feature to the Lockheed team is the Snap Server 550's ease of administration — an important feature for devices deployed at sea with a small team of Coast Guard technicians monitoring all shipboard systems. The Lockheed team had rave reviews for the Snap Server's easy-to-use, web-based management interface and for the display window on the unit that shows the IP address, simplifying configuration.

"The Snap Server 550 was, by far, the easiest to use and the most reliable NAS device we tested," Logan says, noting that reliability is important for a unit that cannot be easily replaced at sea.

Both Ozzimo and Logan emphasize that the Snap Server 550 was the only alternative that met all of the demanding requirements for the Coast Guard's NSC project.

"The Snap Server 550 was definitely a good find for us," Logan says. "It may have been our last option, but it has turned out to be the best option."

Solution Features

Class-Leading Performance and Capacity

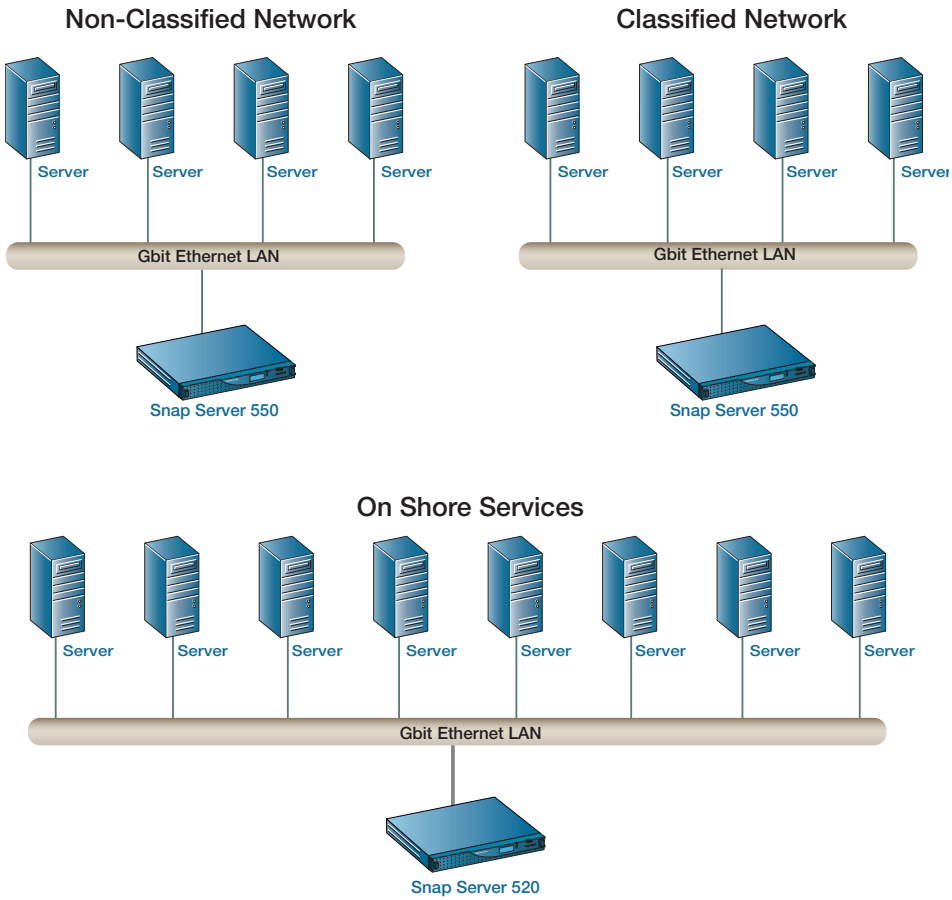
The Snap Server 550 sets a new industry standard for performance and capacity that redefines "mid-range" storage

Rock-Solid Reliability

End-to-end Serial Attached SCSI (SAS) technology delivers exceptional performance and reliability for mission-critical applications.

On-the-Fly Scalability

Adding capacity — up to 43.2TB — is simple with the Snap Server 550's Instant Capacity Expansion (I.C.E).



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